



AGE, SEX AND SIZE COMPOSITION OF PACIFIC HERRING,
(Clupea pallasii), FROM SOUTHEASTERN ALASKA AND
YAKUTAT DURING WINTER AND SPRING, 1971-1972

By:
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ADF&G TECHNICAL DATA REPORTS

This series of reports is designed to facilitate prompt reporting of data from studies conducted by the Alaska Department of Fish and Game, especially studies which may be of direct and immediate interest to scientists of other agencies.

The primary purpose of these reports is presentation of data. Description of programs and data collection methods is included only to the extent required for interpretation of the data. Analysis is generally limited to that necessary for clarification of data collection methods and interpretation of the basic data. No attempt is made in these reports to present analysis of the data relative to its ultimate or intended use.

Data presented in these reports is intended to be final, however, some revisions may occasionally be necessary. Minor revision will be made via errata sheets. Major revisions will be made in the form of revised reports.

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FROM SOUTHEASTERN ALASKA AND YAKUTAT DURING WINTER AND SPRING,
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By

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INTRODUCTION

This report represents the second in a series of reports designated to annually discuss conditions of Southeastern Alaska and Yakutat herring. The conditions of the herring (Clupea pallasii) stocks is determined by the age composition and recruitment within these stocks. The format of this series of reports is intended to provide the basis for the discussion of stock trends as additional years data are acquired.

Historical Use of Stocks

The historical use of the herring stocks is briefly described in the first report of this series (Moberly, 1973). Figure 1 shows the commercial harvest since 1900 in Southeast Alaska.

Description of Present Fishery

The herring fishery in Southeast Alaska and Yakutat is regulated by fishing districts. Seasons and quotas, as defined for the 1971-72 fishing season, were the principal management tools (Table 1). Some fisheries were managed using hydroacoustical assessment. A description of the equipment used in these assessments is given in the Department's Informational Leaflet (Moberly and Thorne, 1974) and progress reports (Moberly and Thorne, 1971 and 1972, and Nummallee, 1973). The stocks managed by hydroacoustical assessment were Carroll Inlet, Deer Island, and Katlian Bay. Assessment data was collected and an estimate of the standing crop made. Level of harvest was generally in the range of 10% to 15% of the estimates standing crop.

Figure 1. Annual harvests of Southeastern Alaska herring.

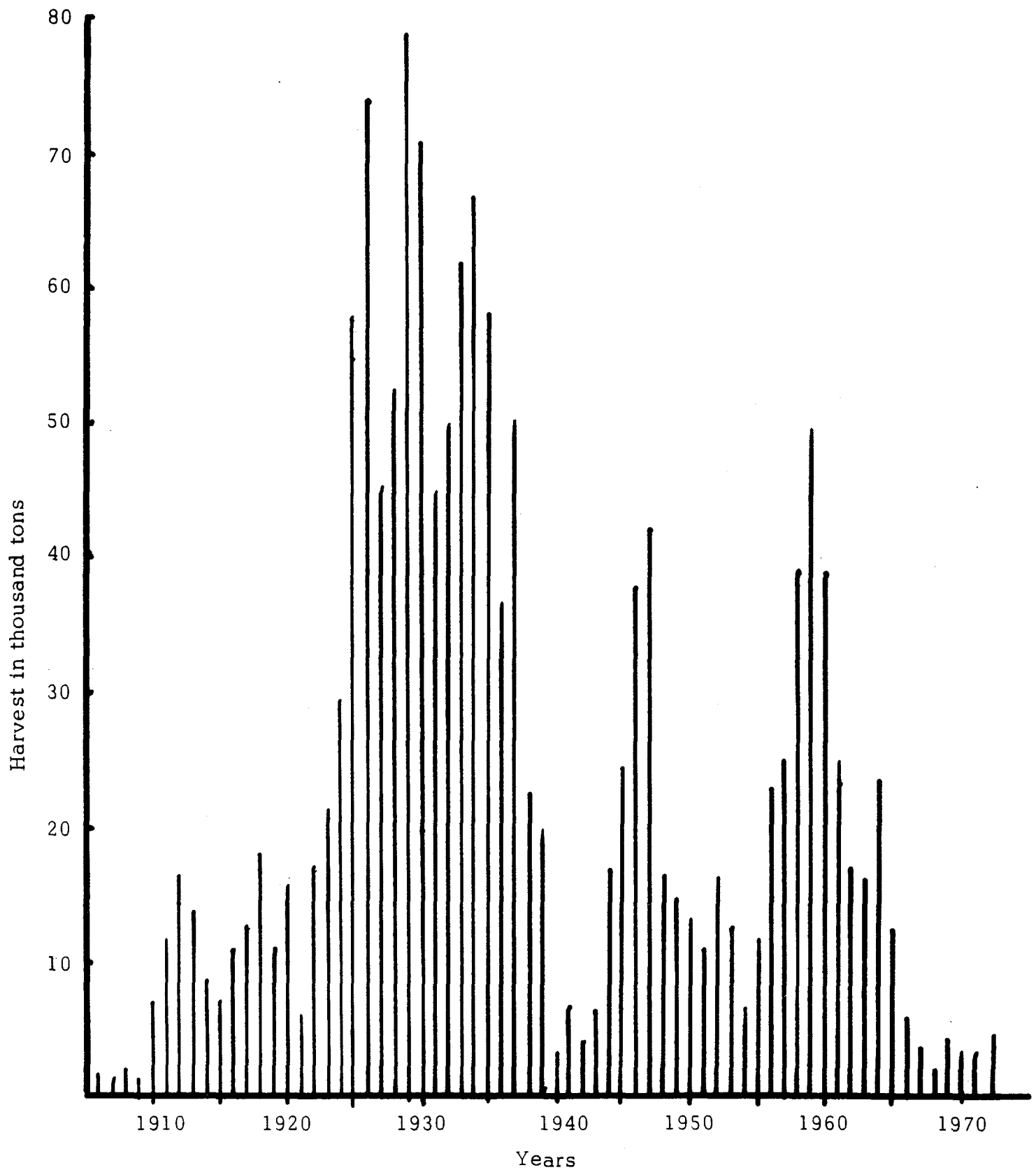


Table 1. Southeastern Alaska and Yakutat herring fishery regulations, 1971-72.

Districts	Season	Quota
1, 2, 3, 4, 5, 6, 7, 8, 9, 12, 14, 16	June 1 to February 28	None
10	No closed season	Not more than 200 short tons March 1 to May 31
11D	No closed season	Not more than 300 short tons March 1 to May 31
Remainder 11	No closed season	Not more than 450 short tons March 1 to May 31
13	No closed season	Not more than 850 short tons in any calendar year
15	No closed season	Not more than 500 short tons March 1 to May 31
Yakutat	No closed season	None

The fisheries are conducted with purse seines and stationary pound nets during the winter and early spring months. Twelve seine vessels and two herring pounds participated in the fishery during 1971-72. Fisheries operated in the vicinities of Ketchikan, Wrangell, Petersburg, Sitka, Pelican, and Juneau (Table 2). No fishing occurred in the Yakutat area during 1971-72. The major fishing areas were Carroll Inlet, George Inlet, and Ward Cove near Ketchikan; Deer Island south of Wrangell; Seymour Canal north of Petersburg; Katlian Bay near Sitka; and Auke Bay north of Juneau.

Biological Studies

Herring have been studied for more than half a century in Southeast Alaska. Many of the major scientists and their work are listed in the first data report (Moberly, 1973).

The current studies consist of two phases. One phase utilizes special hydroacoustical gear aboard a state owned vessel to locate and obtain biomass estimates of herring which are densely schooled in the wintering areas. The second phase, which is reported in this series of data reports, is directed toward annual sampling of known stocks for the determination of age, sex, and size composition of the herring within each stock. This study phase is concerned with recruitment as an indicator of stock condition, and the mortality of individual age groups. These objectives are intended to provide data directly applicable to management decisions.

Recruitment to the adult (mature) population occurs at ages 2, 3, and 4 for Southeast Alaska herring. Immatures (juveniles) appear to school separately. Only one juvenile population was harvested during 1971-72. This harvest was from the Eastern Channel near Sitka and amounted to 41.5 tons (Table 2). Recruitment to the mature stocks is generally complete by age 4, and it is that group which best depicts relative strength of each particular year class.

METHODS

Collection of Herring

Herring for age and growth analysis were collected by several methods. The herring from the commercial purse seine fishery provided most of the samples with those fish being collected from the processors at the location the catch was landed. Some herring were collected on the spawning grounds just prior to or during active spawning by a small purse seine or a variable mesh gillnet.

Table 2. Commercial herring catch in short tons for Southeastern Alaska, winter and spring, 1971-72.

Fishing locations	Short Tons per Month									Totals
	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	
Carroll Inlet			317.6	62.3		65.5	4.3			449.7
George Inlet				75.0		33.0	204.6			312.6
Tongass Narrows				138.2	3.4					141.6
Ward Cove					225.8	94.2				320.0
Deer Island					38.1	68.2	571.7	283.2		961.2
South Craig Point			40.4							40.4
Scow Bay	6.0	6.1			24.4	19.2	5.7			61.4
Farragut Bay								167.5	45.5	213.0
Seymour Canal									472.6	472.6
Katlai Bay								557.9		557.9
Eastern Channel							41.5			41.5
Lisianski Inlet								125.5	75.6	201.1
Auke Bay									433.9	433.9
Totals	6.0	6.1	358.0	275.5	291.7	280.1	827.8	1134.1	1027.6	4206.9

When the variable mesh gillnet was used, it was set for a very short period of time to help prevent saturation of any particular mesh size. When possible, repeated sets were made until a sufficient sample was obtained. All fish were frozen for later examination in the laboratory.

Laboratory Methods

In the laboratory herring were thawed immediately prior to examination. The length of each fish from tip of snout to the caudal peduncle was recorded to the nearest whole millimeter on a caliper measuring board. The weight was taken from an electronic balance to the nearest whole gram. Sex was determined by dissection and a readable (non-regenerated) scale was selected for age determination. Scales were cleaned and dipped in a solution of 10% mucilage glue and placed unsculptured side down for permanent mounting on glass slides. Aging was done using a dissecting microscope, but original readings were not verified by a second reader. The fish were assigned an anniversary date for each complete growing season. All samples collected were taken after growth had ceased in the fall and before growth had resumed in the spring. For example, if a fish was hatched in the spring of 1969 and collected in the fall of 1970, two growing seasons were assumed, and the fish recorded as age 2. If the same fish had been collected in the spring of 1971 (before growth had resumed) it still would have been recorded as age 2.

All scales and original data are filed and available for review upon request.

RESULTS

This section presents age, size and sex composition data for each of 18 samples collected from 17 locations throughout Southeast Alaska.

It is not the intent of this report to prepare lengthy comment on this data, but rather to document the data for future reference when discussing various stocks.

Herring were sampled from the commercial harvest in 13 separate areas. The remaining four samples were obtained by sampling on the spawning grounds, where no commercial fishery occurred (Figure 2).

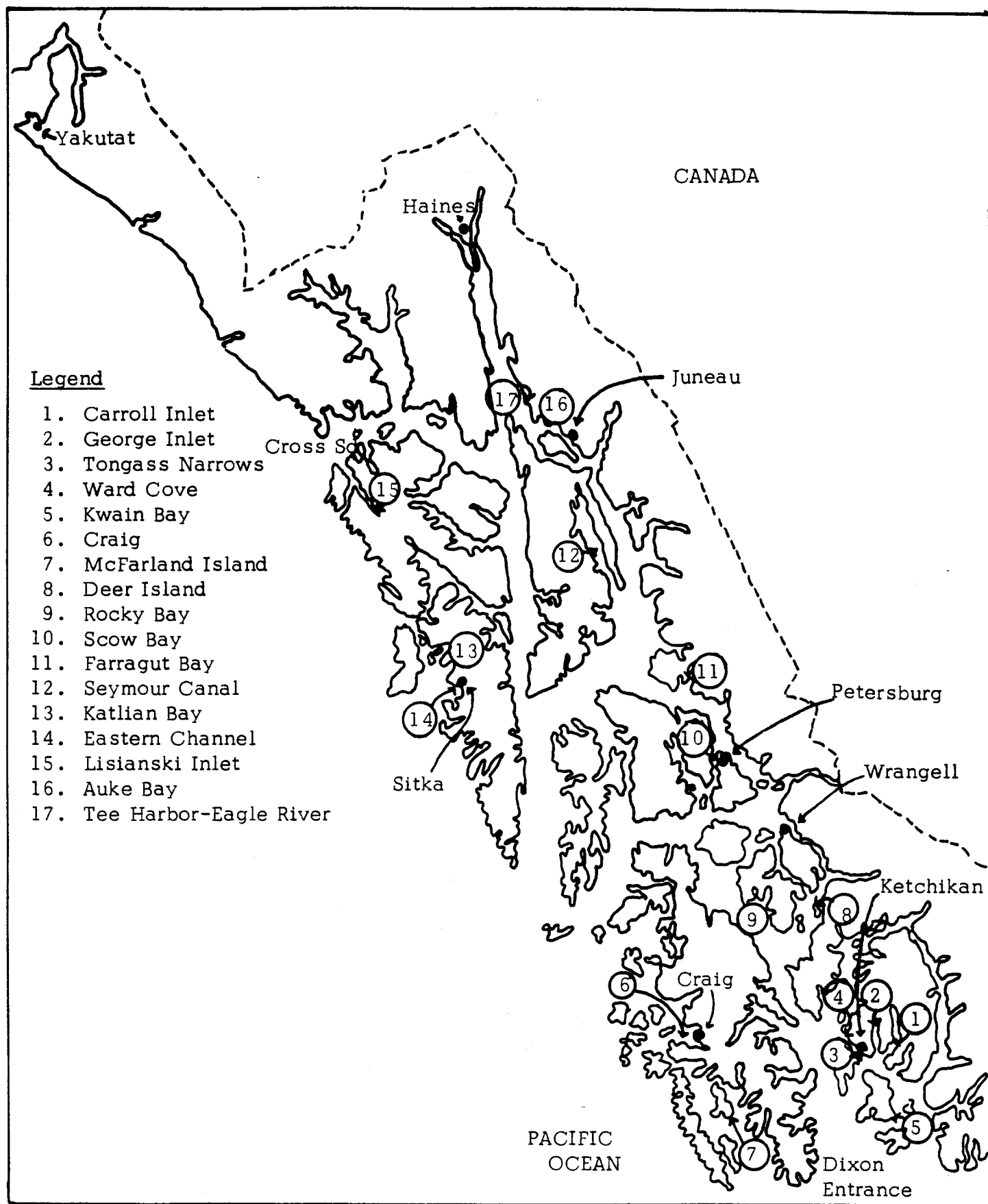


Figure 2. Sampling locations of Southeastern Alaska herring studies, winter and spring of 1971-72.

Ketchikan Area

Five concentrations of herring were sampled between the dates of November 22, 1971 and April 11, 1972. Samples from Carroll Inlet (Table 3), George Inlet (Table 4), Tongass Narrows (Table 5), and Ward Cove (Table 6) were from the commercial purse seine fishery. The sample from Kwain Bay (Table 7) was obtained using a variable mesh gillnet set during active spawning.

The 1967 year class, age 5, comprised 36.7% of the entire sample. The 1968 year class, age 4, comprised 38.6%. Together these two year classes comprised 75.3% of the five samples collected in the Ketchikan area.

Prince of Wales Island Area

No commercial fishery occurred on the west coast of Prince of Wales Island during the winter and spring of 1971-72. Sampling was done in two areas in conjunction with monitoring the spawn on kelp harvest. One sample was collected from the Craig area (Table 8) and the second from the McFarland Islands (Table 9). Sampling was done immediately prior to and during spawning.

As with the Ketchikan area samples, 1967 year class was strong. In the combined samples 34.3% of the fish were from the 1967 year class (age 5). Good strength was shown in the 1968, 1966, and 1965 year classes also.

Wrangell Area

Samples were collected from three locations in this area. The Deer Island sample was collected from the commercial catch (Table 10). The Rocky Bay sample (Table 11) was collected during active spawning using a variable mesh gillnet set from a float plane. The third area, Scow Bay, was sampled from the commercial purse seine fishery in January (Table 12) and again in March (Table 13). Enough difference was observed in the weight of the fish in the two samples that they are presented separately. Scow Bay is located in Wrangell Narrows near Petersburg. The size by year class more closely resembled that of the Deer Island and Rocky Bay fish, therefore, the Scow Bay fish are discussed along with those from the Wrangell area.

The 1967 and 1968 year classes comprised 57.0% of the total samples from the Wrangell area. Good strength is also seen in the 1966 year class of 11.8% and 1965 year class of 12.4%.

Table 3. Age, sex, weight and standard length composition of 556 herring collected from the commercial purse seine fishery of Carroll Inlet, Alaska, November 22, 1971 to March 7, 1972.

Age Group	Year Class	Males				Females				Combined percent
		Frequency		Mean		Frequency		Mean		
				Length	Weight			Length	Weight	
		No.	%	mm	gm	No.	%	mm	gm	
II	1970	*								3.3
III	1969	4	1.8	185	76	27	8.0	185	81	5.6
IV	1968	79	36.4	193	96	158	46.6	197	98	41.1
V	1967	87	40.1	206	118	119	35.1	208	124	35.8
VI	1966	20	9.2	218	136	10	2.9	214	131	5.2
VII	1965	7	3.2	221	137	10	2.9	231	172	3.0
VIII	1964	11	5.1	233	180	10	2.9	233	173	3.6
IX	1963	5	2.3	225	178	3	0.9	242	198	1.4
X	1962	3	1.4	237	197	2	0.6	244	229	0.9
XI	1961									
XII	1960	1	0.5	244	220					0.2
Totals		217				339				
Mean Length				205.0		203.2				
Mean Weight				117.8		113.4				
Sex Composition - 39.2% males and 60.8% females										

*19 age II fish that were not sexed had a mean length of 141 mm and weight of 29 grams.
 1 age III fish not sexed, length 138 mm and weight 26 grams.

Table 4. Age, sex, weight and standard length composition of 468 herring collected from the commercial purse seine fishery of George Inlet, Alaska, December 16, 1971 to March 13, 1972. (Subsampled from 1,243 fish.)

Age Group	Year Class	Males				Females				Combined percent
		Frequency		Mean		Frequency		Mean		
				Length	Weight			Length	Weight	
		No.	%	mm	gm	No.	%	mm	gm	
II	1970	*				1	0.4	160	46	0.2
III	1969	22	10.5	185	69	17	6.6	183	73	8.3
IV	1968	108	51.4	194	90	141	54.7	194	91	53.2
V	1967	64	30.5	202	112	70	27.1	207	119	28.6
VI	1966	8	3.8	220	134	11	4.3	220	138	4.1
VII	1965	3	1.4	227	168	6	2.3	215	133	1.9
VIII	1964	1	0.5	234	179	5	1.9	234	179	1.3
IX	1963	1	0.5	217	139	3	1.2	226	168	0.9
X	1962	2	1.0	229	151	2	0.8	233	166	0.9
XI	1961	1	0.5	256	220	1	0.4	231	178	0.4
XII	1960					1	0.4	238	152	0.2
Totals		210				258				
Mean Length				197.7		199.9				
Mean Weight				99.2		103.9				
Sex Composition - 45.6% males and 54.4% females										

*40 scales were selected from immature fish, sex was not determined. 39 were age II with a mean length of 145 mm and mean weight of 34 grams; 1 age II at 138 mm and 30 grams.

Table 5. Age, sex, weight and standard length composition of 390 herring collected from the commercial purse seine fishery of Tongass Narrows, Alaska, December 19, 1971. (Subsampled from 588 fish.)

Age Group	Year Class	Males				Females				Combined percent
		Frequency		Mean		Frequency		Mean		
				Length	Weight			Length	Weight	
		No.	%	mm	gm	No.	%	mm	gm	
III	1969	3	1.6	196	90	2	1.0	176	70	1.3
IV	1968	62	33.5	201	107	72	35.1	201	105	34.4
V	1967	65	35.1	207	120	82	40.0	212	128	37.7
VI	1966	22	11.9	217	137	21	10.2	217	133	11.0
VII	1965	20	10.8	223	153	17	8.3	225	153	9.5
VIII	1964	6	3.2	229	178	6	2.9	238	179	3.1
IX	1963	4	2.2	231	180	3	1.5	250	223	1.8
X	1962					1	0.5	227	201	0.3
XI	1961	2	1.1	241	180	1	0.5	255	204	0.8
XII	1960	1	0.5	253	232					0.3
Totals		185				205				
Mean Length				209.3				211.0		
Mean Weight				125.1				125.5		
Sex Composition - 46.9% males and 53.1% females										

Table 6. Age, sex, weight and standard length composition of 502 herring collected from the commercial purse seine fishery of Ward Cove, Alaska, January 16, 1972 to February 1, 1972.

Age Group	Year Class	Males				Females				Combined percent
		Frequency		Mean		Frequency		Mean		
				Length	Weight			Length	Weight	
		No.	%	mm	gm	No.	%	mm	gm	
III	1969	10	4.3	190	83	13	4.8	186	77	4.6
IV	1968	88	37.8	196	95	114	42.4	199	97	40.2
V	1967	85	36.5	206	119	94	34.9	206	119	35.7
VI	1966	24	10.3	215	134	24	8.9	215	128	9.6
VII	1965	15	6.4	224	157	10	3.7	224	147	5.0
VIII	1964	6	2.6	234	170	4	1.5	228	153	2.0
IX	1963	1	0.4	231	168	5	1.9	247	201	1.2
X	1962	3	1.3	246	178	2	0.7	246	192	1.0
XI	1961					2	0.7	244	194	0.4
XII	1960	1	0.4	267	264	1	0.4	253	196	0.4
Totals		233				269				
Mean Length				205.3				205.1		
Mean Weight				115.3				113.2		
Sex Composition - 46.2% males and 53.8% females										

Table 7. Age, sex, weight and standard length composition of 228 herring collected by variable mesh gillnet during active spawning from Kwain Bay, Alaska, April 11, 1972.

Age Group	Year Class	Males				Females				Combined percent
		Frequency		Mean		Frequency		Mean		
				Length	Weight			Length	Weight	
		No.	%	mm	gm	No.	%	mm	gm	
IV	1968	17	11.1	204	110	12	16.0	212	119	12.7
V	1967	96	62.8	211	119	47	62.6	215	127	62.7
VI	1966	12	7.8	217	130	1	1.3	220	134	5.7
VII	1965	11	7.2	222	138	2	2.7	227	159	5.7
VIII	1964	8	5.2	225	153	5	6.7	233	168	5.7
IX	1963	4	2.6	238	187	4	5.3	245	192	3.5
X	1962					2	2.7	243	178	0.8
XI	1961	5	3.3	236	162	2	2.7	247	207	3.1

Totals 153 75
Mean Length 213.7 219.3
Mean Weight 125.4 136.6
Sex Composition - 67.2% males and 32.8% females

Table 8. Age, sex, weight and standard length composition of 586 herring collected with variable mesh gillnet and small purse seine during active spawning at Craig, Alaska, March 30, 1972 to April 3, 1972.

Age Group	Year Class	Males				Females				Combined percent
		Frequency		Mean		Frequency		Mean		
				Length	Weight			Length	Weight	
		No.	%	mm	gm	No.	%	mm	gm	
III	1969	36	9.4	177	71	11	5.4	182	76	8.0
IV	1968	44	11.5	194	98	24	11.8	195	104	11.6
V	1967	135	35.2	204	123	68	33.5	206	123	34.6
VI	1966	78	20.4	211	138	51	25.1	213	140	22.0
VII	1965	48	12.5	215	145	31	15.3	216	153	13.5
VIII	1964	28	7.3	217	151	8	3.9	218	151	6.1
IX	1963	5	1.3	227	168	5	2.5	226	178	1.7
X	1962	6	1.6	221	177	3	1.5	219	140	1.5
XI	1961	3	0.8	223	139	2	1.0	231	196	0.9

Totals 383 203
Mean Length 204.8 207.8
Mean Weight 124.5 130.6
Sex Composition - 64.9% males and 35.1% females

Table 9. Age, sex, weight and standard length composition of 534 herring collected by small purse seine from McFarland Island, Alaska, April 24, 1972.

Age Group	Year Class	Males				Females				Combined percent
		Frequency		Mean		Frequency		Mean		
				Length	Weight			Length	Weight	
		No.	%	mm	gm	No.	%	mm	gm	
II	1970	2	0.7	150	41	1	0.4	147	39	0.6
III	1969	29	10.7	181	81	24	9.1	183	86	9.9
IV	1968	68	25.2	195	104	56	21.2	196	111	23.2
V	1967	97	35.9	206	130	84	31.8	210	143	33.9
VI	1966	13	4.8	212	143	16	6.1	215	157	5.4
VII	1965	44	16.3	221	161	48	18.2	226	186	17.2
VIII	1964	11	4.1	219	169	17	6.4	225	187	5.2
IX	1963	3	1.1	228	171	8	3.0	231	203	2.1
X	1962					3	1.1	230	212	0.6
XI	1961	2	0.7	220	164	4	1.5	231	198	1.1
XII	1960	1	0.4	249	235	3	1.1	234	228	0.8
Totals		270				264				
Mean Length				204.0				210.0		
Mean Weight				125.9				146.4		
Sex Composition - 50.4% males and 49.6% females										

Table 10. Age, sex, weight and standard length composition of 1,083 herring collected from the commercial purse seine fishery of Deer Island, Alaska, during 1971 and 1972.

Age Group	Year Class	Males				Females				Combined percent
		Frequency		Mean		Frequency		Mean		
				Length	Weight			Length	Weight	
		No.	%	mm	gm	No.	%	mm	gm	
II	1970	3	0.5	148	42					0.3
III	1969	19	3.1	178	75	12	2.5	178	74	2.9
IV	1968	126	20.8	190	95	108	22.6	190	95	21.6
V	1967	258	42.6	197	110	210	44.0	199	115	43.2
VI	1966	74	12.2	202	121	57	11.9	206	130	12.1
VII	1965	76	12.5	208	136	47	9.9	212	143	11.4
VIII	1964	40	6.6	212	144	33	6.9	214	150	6.7
IX	1963	8	1.3	218	155	6	1.3	217	161	1.3
X	1962	1	0.2	210	127	3	0.6	230	184	0.4
XI	1961					1	0.2	230	155	0.1
XII	1960	1	0.2	243	205					0.1
Totals		606				477				
Mean Length				197.9				200.0		
Mean Weight				113.0				117.5		
Sex Composition - 55.4% males and 44.6% females										

Table 11. Age, sex, weight and standard length composition of 162 herring collected by variable mesh gillnet during active spawning at Rocky Bay, Alaska, May 5, 1972.

Age Group	Year Class	Males				Females				Combined percent
		Frequency		Mean		Frequency		Mean		
				Length	Weight			Length	Weight	
		No.	%	mm	gm	No.	%	mm	gm	
IV	1968	5	4.5	197	93					3.1
V	1967	48	42.9	200	101	22	44.0	204	111	43.2
VI	1966	7	6.3	201	104	6	12.0	212	128	8.0
VII	1965	14	12.5	209	123	8	16.0	212	123	13.6
VIII	1964	27	24.1	217	137	13	26.0	224	151	24.7
IX	1963	7	6.3	216	137	1	2.0	217	112	4.9
X	1962	2	1.8	217	114					1.2
XI	1961	2	1.8	233	174					1.2
Totals		112				50				
Mean Length				207.0				211.7		
Mean Weight				116.3				125.3		
Sex Composition - 69.5% males and 30.5% females										

Table 12. Age, sex, weight and standard length composition of 459 herring collected from the commercial purse seine fishery of Scow Bay, Alaska, January 10, 1972. (Sample #1, subsampled from 1,270 fish.)

Age Group	Year Class	Males				Females				Combined percent
		Frequency		Mean		Frequency		Mean		
				Length	Weight			Length	Weight	
		No.	%	mm	gm	No.	%	mm	gm	
II	1970	1	0.5	152	42	6	2.4	143	38	1.5
III	1969	28	13.4	164	67	49	19.6	164	63	16.8
IV	1968	56	26.8	175	82	84	33.6	175	75	30.5
V	1967	40	19.1	176	85	37	14.8	185	95	16.8
VI	1966	20	9.6	185	93	21	8.4	191	101	8.9
VII	1965	45	21.5	193	120	35	14.0	193	113	17.4
VIII	1964	9	4.3	193	125	12	4.8	199	127	4.6
IX	1963	6	2.9	190	117	3	1.2	212	153	2.0
X	1962	2	1.0	200	152	1	0.4	196	124	0.7
XI	1961	1	0.5	204	163	1	0.4	191	115	0.4
XII	1960	1	0.5	190	134					0.2
XIII	1959					1	0.4	209	169	0.2
Totals		209				250				
Mean Length				180.0				179.5		
Mean Weight				93.8				86.3		
Sex Composition - 47.0% males and 53.0% females										

Table 13. Age, sex, weight and standard length composition of 247 herring collected from the commercial purse seine fishery of Scow Bay (Wrangell Narrows), Alaska, March 23, 1972. (Sample #2)

Age Group	Year Class	Males				Females				Combined percent
		Frequency		Mean		Frequency		Mean		
				Length	Weight			Length	Weight	
		No.	%	mm	gm	No.	%	mm	gm	
II	1970	1	0.8	160	48	3	2.3	153	42	1.6
III	1969	15	12.6	171	63	39	30.5	164	53	21.8
IV	1968	44	37.0	174	68	36	28.1	180	73	32.3
V	1967	18	15.1	182	79	20	15.6	188	87	15.3
VI	1966	23	19.3	188	90	23	18.0	188	90	18.5
VII	1965	14	11.8	192	91	3	2.3	195	99	7.3
VIII	1964	2	1.7	198	99	4	3.1	206	116	2.4
IX	1963									
X	1962	2	1.7	214	151					0.8
Totals		119				128				
Mean Length				180.8				178.5		
Mean Weight					77.6				73.4	
Sex Composition not determined.										

Table 14. Age, sex, weight and standard length composition of 439 herring collected from the commercial pound fishery of Farragut Bay, Alaska, April 28, 1972.

Age Group	Year Class	Males				Females				Combined percent
		Frequency		Mean		Frequency		Mean		
				Length mm	Weight gm			Length mm	Weight gm	
III	1969	3	1.3	165	66	4	1.9	171	74	1.6
IV	1968	43	18.8	182	89	46	21.9	189	101	20.3
V	1967	4	1.7	197	111	5	2.4	197	119	2.1
VI	1966	23	10.0	208	138	18	8.6	208	139	9.3
VII	1965	132	57.6	208	138	120	57.1	210	145	57.4
VIII	1964	8	3.5	221	171	7	3.3	217	167	3.4
IX	1963	9	3.9	206	142	7	3.3	208	148	3.6
X	1962	4	1.7	213	159	1	0.5	231	206	1.1
XI	1961	2	0.9	232	189	2	1.0	240	245	0.9
XII	1960	1	0.4	221	169					0.2
Totals		229				210				
Mean Length				203.3				204.6		
Mean Weight				129.4				134.6		
Sex Composition - 52.1% males and 47.9% females										

Petersburg Area

Samples from two locations will be discussed under the Petersburg area. The first is Farragut Bay (Table 14) and the second is Seymour Canal (Table 15).

Size of the fish from these two areas was greater for individual year classes than from the Wrangell area.

The strong 1965 year class from the Farragut Bay sample was still dominant. In the previous years sample, this year class made up 61.3% of the sample. During 1971-72 this year class still made up 57.4% of the sample. No doubt this year class will dominate for a couple more years, unless exceptionally good recruitment obscures the 1965 year class.

The Seymour Canal sample showed good strength in the 1965 through the 1968 year classes in which the 1968 year class was dominant.

Sitka Area

Herring samples were collected from two locations near Sitka and a third sample was collected from Lisianski Inlet. All three samples were taken from the commercial harvest.

In the sample collected from Katlian Bay (Table 16), the 1968 year class dominated, however, good strength was also shown in the 1967 and 1966 year classes. The 1964 year class showed very good strength at 10.0% of the sample. This year class comprised 16.6% of the sample collected during 1970-71.

The second area sampled in the Sitka area was in the Eastern Channel area (Table 17) near the mouth of Silver Bay. In this sample 96.7% of the fish were in age groups 2, 3, and 4. This could possibly be the juvenile stock of the Katlian Bay population.

The third area where samples were collected was from Lisianski Inlet (Table 18) near Pelican. The 1968 year class comprised 51.3% of this sample. These fish are much smaller than the Katlian Bay fish when comparing average weight by year classes.

Juneau Area

Samples were collected from four locations near Juneau. The Auke Bay,

Table 15. Age, sex, weight and standard length composition of 540 herring collected from the commercial purse seine fishery of Seymour Canal, Alaska, May 9, 1972.

Age Group	Year Class	Males				Females				Combined percent
		Frequency		Mean		Frequency		Mean		
				Length	Weight			Length	Weight	
		No.	%	mm	gm	No.	%	mm	gm	
II	1970	1	0.4	149	38					0.2
III	1969	5	2.0	177	70	7	2.4	174	72	2.2
IV	1968	67	27.2	191	98	69	23.5	192	104	25.2
V	1967	30	12.2	200	117	40	13.6	198	121	13.0
VI	1966	51	20.7	206	130	51	17.3	206	135	18.9
VII	1965	52	21.1	210	138	77	26.2	209	143	23.9
VIII	1964	15	6.1	213	152	21	7.1	217	164	6.7
IX	1963	10	4.1	220	164	10	3.4	229	195	3.7
X	1962	8	3.3	221	166	14	4.8	225	188	4.1
XI	1961	4	1.6	223	182	2	0.7	227	194	1.1
XII	1960	2	0.8	220	160	2	0.7	224	208	0.7
XIII	1959	1	0.4	224	200	1	0.3	235	227	0.4
Totals		246				294				
Mean Length				203.0				204.3		
Mean Weight				125.1				134.2		
Sex Composition - 44.4% males and 55.6% females										

Table 16. Age, sex, weight and standard length composition of 733 herring collected from the commercial purse seine fishery of Katlian Bay, Alaska, April 15 and 20, 1972.

Age Group	Year Class	Males				Females				Combined percent
		Frequency		Mean		Frequency		Mean		
				Length	Weight			Length	Weight	
		No.	%	mm	gm	No.	%	mm	gm	
II	1970	4	1.1	155	51					0.5
III	1969	28	7.5	188	83	19	5.3	191	87	6.4
IV	1968	114	30.6	199	109	104	28.9	201	111	29.7
V	1967	64	17.2	210	121	68	18.9	215	134	18.0
VI	1966	67	18.0	222	149	80	22.2	224	156	20.0
VII	1965	25	6.7	219	143	25	6.9	230	164	6.8
VIII	1964	33	8.8	228	164	40	11.1	229	171	10.0
IX	1963	16	4.3	227	165	16	4.4	232	164	4.4
X	1962	11	2.9	232	189	7	1.9	236	188	2.5
XI	1961	6	1.6	235	173	1	0.3	211	147	1.0
XII	1960	3	0.8	238	188					0.4
XIII	1959	2	0.5	231	175					0.3
Totals		373				360				
Mean Length				210.8				215.3		
Mean Weight				129.6						138.4
Sex Composition - 50.8% males and 49.2% females										

Table 17. Age, sex, weight and standard length composition of 1,424* herring collected from the commercial purse seine fishery of Eastern Channel, Alaska, February 4, 1972.

Age Group	Year Class	Males				Females				Combined percent
		Frequency		Mean		Frequency		Mean		
				Length	Weight			Length	Weight	
		No.	%	mm	gm	No.	%	mm	gm	
II	1970	288	40.4	151	42	25	3.5	155	47	22.0
III	1969	228	32.0	177	78	399	56.0	182	82	44.0
IV	1968	174	24.4	191	96	263	36.9	192	97	30.7
V	1967	18	2.5	194	105	25	3.5	194	108	3.0
VI	1966	4	0.6	201	120					0.3
Totals		712				712				
Mean Length		170.5				177.9				
Mean Weight		68.8				87.2				
Sex Composition - 57.0% males and 43.0% females										
*Length - weight data extrapolated from 400 fish.										

Table 18. Age, sex, weight and standard length composition of 437 herring collected from the commercial purse seine fishery of Lisianski Inlet, Alaska, May 11, 1972. (Subsampled from 757 fish.)

Age Group	Year Class	Males				Females				Combined percent
		Frequency		Mean		Frequency		Mean		
				Length	Weight			Length	Weight	
		No.	%	mm	gm	No.	%	mm	gm	
II	1970	30	12.6	148	40	4	2.0	148	43	7.8
III	1969	64	26.9	173	69	67	33.7	177	76	30.0
IV	1968	123	51.7	190	95	101	50.8	194	103	51.3
V	1967	14	5.9	197	107	19	9.5	198	112	7.6
VI	1966	6	2.5	206	125	7	3.5	202	118	3.0
VII	1965	1	0.4	214	120					0.2
VIII	1964									
IX	1963					1	0.5	198	121	0.2
Totals		238				199				
Mean Length				181.2				188.1		
Mean Weight				82.6				94.1		
Sex Composition - 55.5% males and 44.5% females										

Tee Harbor, and Eagle River samples were combined (Table 19) and the fourth sample from the commercial pound in Auke Bay is shown in Table 20.

The samples collected with the commercial herring pound each year are not combined with the other samples in the area because of possible gear selectivity and starvation.

The 1968 year class was very strong and dominated all samples. Good strength was also shown in 1967 and 1969.

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Table 19. Age, sex, weight and standard length composition of 1,073 herring collected by small purse seine from Auke Bay (Tee Harbor and Eagle River Landing), Alaska, May 1 and 4, 1972. (Sample #1)

Age Group	Year Class	Males				Females				Combined percent
		Frequency		Mean		Frequency		Mean		
				Length	Weight			Length	Weight	
		No.	%	mm	gm	No.	%	mm	gm	
II	1970	2	0.5	149	40	2	0.3	162	48	0.4
III	1969	70	15.9	164	58	88	13.9	166	61	14.7
IV	1968	256	58.0	176	73	384	60.8	179	77	59.6
V	1967	58	13.2	186	86	74	11.7	188	91	12.3
VI	1966	20	4.5	197	107	26	4.1	201	112	4.3
VII	1965	13	2.9	201	119	22	3.5	206	127	3.3
VIII	1964	8	1.8	212	130	4	0.6	209	146	1.1
IX	1963	3	0.7	218	154	12	1.9	220	142	1.4
X	1962	6	1.4	221	153	13	2.1	217	147	1.8
XI	1961	4	0.9	225	155	6	0.9	231	167	0.9
XII	1960					1	0.2	226	150	0.1
XIII	1959	1	0.2	208	121					0.1
Totals		441				632				
Mean Length				179.2				175.8		
Mean Weight				78.7				83.2		
Sex Composition - 41.8% males and 58.2% females										

Table 20. Age, sex, weight and standard length composition of 630 herring collected from the commercial pound fishery of Auke Bay, Alaska, June 1, 1972. (Sample #2)

Age Group	Year Class	Males				Females				Combined percent
		Frequency		Mean		Frequency		Mean		
				Length	Weight			Length	Weight	
		No.	%	mm	gm	No.	%	mm	gm	
II	1970	8	3.1	143	40	7	1.9	150	46	2.4
III	1969	69	26.7	159	57	73	19.6	161	59	22.5
IV	1968	141	54.7	172	71	213	57.3	172	67	56.2
V	1967	24	9.3	175	83	54	14.5	175	86	12.4
VI	1966	6	2.3	193	106	8	2.2	196	107	2.2
VII	1965	4	1.6	197	109	9	2.4	195	114	2.1
VIII	1964	2	0.8	205	125	4	1.1	219	154	1.0
IX	1963	3	1.2	203	131	1	0.3	205	112	0.6
X	1962	1	0.4	204	124	2	0.5	223	167	0.5
XI	1961									
XII	1960					1	0.3	224	142	0.2
Totals		258				372				
Mean Length				169.6				172.0		
Mean Weight				70.4				71.4		
Sex Composition - 41.1% males and 58.9% females										

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